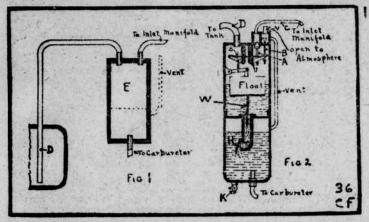
Frederick C. Guerrlich. THE VACUUM SYSTEM.

In the last lecture I mentioned the fact that, because of the difficulty of seping the tank and piping of the Pressure Feed System from leaking, the

uum System was displacing the Pressure System. Let us imagine we are inventing such a system. Suppose Let us imagine we are inventing such a system. Suppose we had a small tank, as "E" (Fig. 1), connected to a supply tank by a pipe "D" and then in some way drew all the air out of this tank, or, in other words, created a vacuum in it. What would happen? Why, the gasolene, because of the pressure of the atmosphere, would be forced, or, as is generally said, sucked up through the pipe "D" from the supply tank to the tank "E."

If the bottom of the tank had a pipe running from it to the carbureter, placed much lower, would the gasolene then flow to the carbureter? It would not; as, if the gasolene was sucked up from the supply tank because of the vacuum, the gasolene would also be sucked up from the carbureter, instead of flowing to it.

Thus, here is a problem. This, however, at first glance, can be taken care of by having the tank divided into two chambers, an upper and lower, and having the lower open to the atmosphere, as shown dotted in Fig. 1. This will permit the gasolene to flow from the lower chamber to the carbureter, but will it flow from the upper to the lower? No, not while there is a vacuum in the upper. So here is another problem, and what shall we do? Obviously, the liquid cannot flow from the upper to the lower chamber in a constant stream, but could we make it flow periodically? Let us see. If we make a vacuum in the upper chamber and then draw gasolene from the supply tank until the



chamber is full and then open the chamber to the atmosphere, will the gas flow to the lower chamber? Why, yes.

How, then, can we cause a vacuum to form in the upper chamber when

It is empty and open it to the atmosphere when full? This could be done by valves, but how can the valves be operated? Why, by a float. Thus we have the construction shown in Fig. 2.

"C" is the pipe by which the air is drawn out of the chamber and "A" the valve which will open and close it. "V" is a pipe open to the air, and "B" its valve. "G" is the float. Note that when the float is up the spring "S" is higher than the centre "U" of the level "F," thus this level will be pulled up and open "B" and close "A." When the float is down the spring will be lower than "U," and thus the lever "F" will be pulled down, closing "B" and opening "A." By this arrangement "B" will open and "A" closed for almost the entire downward movement of the float, while "B" will be closed and "A" open for almost the entire upward movement. A very clever invention.

How is the vacuum obtained? When the engine is running there is vacuum in the inlet manifold, and so if the pipe "C" is connected to the manifold this vacuum will also form in the vacuum or upper chamber.

In order to prevent the liquid being sucked from the lower to the upper chamber a check, or, as it is called, flapper valve "H" is placed on the tube.

through which the gasolene flows. Note that the mouth of the pipe leading to the carbureter is higher than the bottom of the tank. This is to allow the water to settle in the bottom and

not flow to the carbureter. It is a good plan, therefore, to drain out about a cup full of the liquid once a week through the pet cock "K."

To review the action: When the engine is running a vacuum will form in the float chamber and gasolene thus be drawn into this float or upper chamber from the supply tank until the float is raised, when the suction will be cut off and the atmosphere let in. The gasolene will then flow to the lower chamber, and from this to the carbureter. As the upper chamber empties, its

float will drop and open the suction pipe and close the atmosphere pipe again.

The writer recently met with a peculiar and unusual trouble or accident with the vacuum tank. On the bottom of the float there is a guide rod "W." The float, due to the roughness of the road, was thrown or bounced up so high that this rod came out of its guide and rested on the side of it, so that the

float could not drop. This meant that the air vent tube was open and the

vacuum destroyed, even though the tank was empty.

The car was running finely, when suddenly there was a carbureter popping, and the engine stopped. After disconnecting and blowing through all the tubing and finally taking the tank apart, the above was found to be the cause

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business, but it has proved itself to be a very sturdy branch of industry.

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WILLS-ST. CLAIRE
IN NEW QUARTERS

Edwin B. Jackson, president of the Wills-Sainte Claire Company of New York, announces the opening on December 1 of its new showroom in the Fisk Building, Fifty-seventh street at Broadway, and also the opening of its new service station at Fiftieth street and Twelfth avenue.

The Wills-Sainte Claire was originally introduced on Broadway on March 10 of this year. That the car has met with public approval is borne out by the steadily increasing volume of business which this company has enjoyed.

The new quarters will permit of an adequate display of the complete line of open and enclosed cars, including some custom made models.

Prior to the organization of the Wills-Sainte Claire Company of New York and later on vice-president of the Packard Motor Car Company of New York and later on vice-president of the Wills-Overland Company, so that he has had valuable experience both in the manufacturing and sales departments of the business. Mr. Jackson had the following statement to make in reference to the present condition of the motor car will be present condition of motor cars the public has been "produced." As a direct result of this desire to get cars onto the loading platform for shipment a good many operating features have gotten to been adpoid.

Success produced a lack of attention to economic management and the public displayed a willingness to accept an increased price to absorb inefficiency.

"Throughout the past year manufacturers have gone to unheard of extremes in order to reduce and properly protected, inspection to economic management and the public of absorb inefficiency.

"Throughout the past year manufacturers have not been acrefully watched, reserves have gotten to been arefully watched, reserves have not been

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solutely honest and honorable, and are simply the result of a misunderstanding. The writer, who is not connected with any manufacturer, has seen many cases where the

and practically pass everything that comes through the plant and thus reduce his costs and give the public apparently the same piece of mechanism.

"The manufacturer, to succeed, must maintain the quality of his merchandise.

"The public are entitled to economies the right grade of steel."

Brake Adjustment.

When the car owner has installed on his vehicle a winter body of any type he should remember that he has added considerable weight to the vehicle. For tribute to serious accident.

### The first cost is practically the last

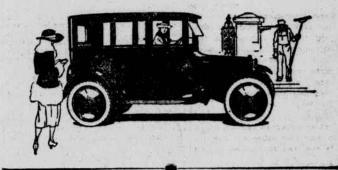


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